Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

Hendricks is Anna's husband is correct, but Klaus is not Katrine's husband as stated, neither is Hans the husband of Gertrude.

The problem reduces to this: To find three square numbers, which if 63 be added to each the sum in each case will be square. These numbers are readily found by trial to be 1, 81 and 961. We can then make out the following scheme:

	Shillings	Hogs	Hogs	Shillings	
Hans	64	8	1	1	Katrine
Klaus	144	12	9	81	Gertrude
Hendricks	1024	32	31	961	Anna

We see that the third man bought 23 hogs more than the second woman. Hence Hendricks was the name of the third man and Gertrude the name of the second woman. Also the second man bought 11 more than the first woman. Hence, Klaus was the second man and Katrine the first woman. By writing in these names and giving the remaining spaces to the other two names, we shall have each man's name opposite to that of his wife. From which we see that Klaus is Gertrude's husband and not Katrine's as stated.

Also solved by *LON C. WALKER*. Professor Walker also solved No. 164.

ALGEBRA.

164. Proposed by F. P. MATZ, Sc. D., Ph. D., Professor of Mathematics and Astronomy in Defiance College, Defiance, Ohio.

By Sylvester's dialytic method form the eliminant between $mx^3+py^2=0$ ....(1), and $px^2+my^3=0$....(2). Also between $mx^4+py=0$....(1), and $px^3+my^3=0$....(2).

Solution by DR. L. E. DICKSON, The University of Chicago.

The statement of this problem is unfortunate. There is no condition on the coefficients m and p in order that the either pair of equations (1) and (2) shall be simultaneous. The trivial cases in which either m or p is zero will be excluded.

(1) Solution of the simultaneous equations

$$mx^3+py^2=0,\ my^3+px^2=0.$$

Since m and p are not both zero, the determinant

$$\begin{vmatrix} x^3 & y^2 \\ y^3 & x^2 \end{vmatrix}=0, \text{ whence } x^5=y^5.$$

Let $x=\omega y$, where ω is an arbitrary fifth root of unity. Then

$$m\omega^3y^3+py^2\equiv y^2(m\omega^3y+p)=0.$$

Hence there are six sets of solutions:

$$x=0,\ y=0;\ x=-\frac{p}{m}\omega^3,\ y=-\frac{p}{m}\omega^2.$$

(2) Solution of the simultaneous equations

$$mx^4+py=0,\ my^3+px^3=0.$$

In addition to the solutions $x=y=0$, there are exactly nine sets of solutions

$$x=\varepsilon p^{4/9}m^{(-4)/9},\ y=-\varepsilon^4 p^{7/9}m^{(-7)/9},$$

where ε is an arbitrary ninth root of unity.

165. Proposed by **J. K. ELLWOOD, A. M.,** Principal of Colfax School, Pittsburg, Pa.

Solve $x^4-x=14$, by quadratics.

Solution by **G. B. M. ZERR, A.M., Ph.D.,** Professor of Chemistry and Physics, The Temple College, Philadelphia, Pa.

$x^4-x=14$ or $x^4-16=x-2$.

$$\therefore\ x^2-4=\frac{x-2}{x^2+4}=\frac{x}{x^2+4}-\frac{2}{x^2+4}.$$

$$\therefore\ x^2-\frac{x}{x^2+4}+\frac{1}{4(x^2+4)^2}=4-\frac{2}{x^2+4}+\frac{1}{4(x^2+4)^2}.$$

$$\therefore\ x=2 \text{ or } x=-2+\frac{1}{x^2+4}.$$

$$\therefore\ x=2 \text{ or } x^3+2x^2+4x+7=0.$$

$\therefore\ x=2$ or $=-1\frac{13}{15}$ nearly, or $-\frac{1}{15}[1\pm\sqrt{(-843)}]$ nearly.

166. Proposed by **MARCUS BAKER,** U. S. Geological Survey, Washington, D. C.

Solve
$$ax+by=2zx\ldots.(1).$$
$$cy+dz=2xy\ldots.(2).$$
$$ez+fx=2yz\ldots.(3).$$

Solution by the **PROPOSER.**

From (1), (2), and (3), respectively,

$$y=\frac{(2z-a)x}{b}=\frac{dz}{2x-c}=\frac{ez+fx}{2z},$$

whence
$$x(2x-c)(2z-a)=bdz\ldots.(4),$$
$$fx(2x-c)+ez(2x-c)=2dz^2\ldots.(5).$$